

## **WHAT IS CLAIMED:**

1. A colloid comprising a sulfone polymer.
2. The colloid claim 1, wherein said sulfone polymer is selected from the group consisting of copolymers and homopolymers of polysulfone, polyethersulfone, polyphenylsulfone, and sulfonated polysulfone, or mixtures thereof.
3. The colloid of claim 1, wherein said polymer is a homopolymer or a copolymer of polysulfone.
4. The colloid of claim 3, wherein said polymer has a molecular weight of 17,000 to 35,000.
5. The colloid of claim 3, wherein said polymer has a molecular weight of 26,000 to 27,000.
6. The colloid of claim 1, wherein said polymer is a polyethersulfone homopolymer or a polyethersulfone copolymer.
7. The colloid of claim 6, wherein said polymer has a molecular weight of 13,000 to 23,000.
8. The colloid of claim 6, wherein said polymer has a molecular weight of 16,000 to 20,000.
9. The colloid of claim 1, wherein particles of said colloid have an average diameter of 10 nm to 1000 nm.
10. The colloid of claim 1, wherein particles of said colloid have an average diameter of 25 nm to 500 nm.
11. The colloid of claim 1, wherein particles of said colloid have an average diameter of 50 nm to 100 nm.

12. A method of making the colloid of claim 1, comprising mixing a solution and water, to form said colloid;

wherein said solution comprises a polymer, a solvent, and an acid.

13. The method of claim 12, wherein said polymer is selected from the group consisting of copolymers and homopolymers of polysulfone, polyethersulfone, polyphenylsulfone, and sulfonated polysulfone, or mixtures thereof.

14. The method of claim 12, wherein said solution further comprises a surfactant selected from the group consisting of sodium lauryl sulfate, TRITON X-45, and TRITON X-100, or mixtures thereof.

15. The method of claim 12, wherein said water further comprises a surfactant.

16. The method of claim 12, wherein said solvent is selected from the group consisting of *N*-methyl pyrrolidine, *N,N*-dimethylformamide, dimethyl sulfoxide, acetone, and dioxane, or mixtures thereof.

17. The method of claim 12, further comprising the colloid immobilized on a substrate.

18. The method of claim 17, wherein said substrate is selected from the group consisting of a membrane or a bead.

19. A method for purifying water, comprising:  
contacting a colloid comprising a polymer with water, the water comprising organic matter; and  
separating the colloid from the water.

20. The method of claim 19, wherein said polymer is selected from the group consisting of copolymers and homopolymers of polysulfone, polyethersulfone, polyphenylsulfone, and sulfonated polysulfone, or mixtures thereof.

21. The method of claim 19, wherein said polymer is selected from the group consisting of copolymers and homopolymers of cellulose acetate, polyacrylonitrile, polyetherimide, and poly(vinylidene fluoride), or combinations thereof.

22. The method of claim 19, wherein said colloid is immobilized on a membrane or on beads.

23. The method of claim 19, wherein said contacting occurs in a fluidized bed reactor or in an agitated vessel.

24. The method of claim 19, wherein said colloids are removed from said water supply by filtration or by gravity-decantation.

25. The method of claim 19, further comprising desorbing the organic matter from the colloid.

26. The method of claim 25, further comprising returning said colloids to said water.

27. A method of purifying a colloid, comprising:  
contacting a colloid comprising organic matter with an alkali solution.

28. The method of claim 27, wherein the organic matter comprises at least one member selected from the group consisting of humic acid, geosmin, and 2-methylisoborneol.

29. The method of claim 27, wherein said alkali is selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonium hydroxide, and calcium hydroxide, or mixtures thereof.

30. In a device for the purification of drinking water, including activated carbon and optional chemical absorption resins, the improvement comprising substitution of at least a portion of the activated carbon with polymer colloids.

31. In the device of claim 30, wherein the polymer is a sulfone polymer.

32. In the device of claim 30, wherein the polymer is selected from the group consisting of copolymers and homopolymers of cellulose acetate, polyacrylonitrile, polyetherimide, and poly(vinylidene fluoride), or combinations thereof.

33. In the device of claim 30, wherein the drinking water comprises at least one member selected from the group consisting of humic acid, geosmin, and 2-methylisoborneol.